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Title: **METHOD OF AND APPARATUS FOR GOLF CLUB CLEANING**

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METHOD OF AND APPARATUS FOR GOLF CLUB CLEANING

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RELATED APPLICATION(S)

This application is a continuation-in-part of U.S. patent application serial no. 09/793,723 filed February 26, 2001, and claims the benefit of U.S. Provisional application serial no. 60/398,243 filed 07/24/2002, U.S. provisional application serial no. 60/184,881 filed February 25, 2000 and U.S. patent application serial no. 09/793,723 filed February 26, 2001 and incorporates the entirety thereof by reference herein. This application also incorporates by reference the following U.S. Patents, of which applicant is a co-inventor: U.S. Pat. No. 15 5,366,560 and 5,588,901.

BACKGROUND OF THE INVENTION

FIELD OF THE INVENTION

The present invention relates to methods of and apparatus for cleaning, and more specifically, but not by way of limitation, to a golf club head cleaning system adapted for cleaning multiple golf club heads substantially at the same time.

HISTORY OF RELATED ART

As set forth in Applicant's co-pending application serial no. 09/793,723, referenced above, high-pressure blast cleaning systems are well known. Such systems are often used to clean durable surfaces such as concrete and other material. They are also frequently used to

remove such things as graffiti from building exteriors. Applicant has, however, also developed improvements in such systems and the like to facilitate the cleaning of golf clubs. In an effort to affect a more thorough cleaning, abrasives such as sodium bicarbonate may be added to power washers, and this has been found to be particularly advantageous in the cleaning of golf clubs,
5 which, as described below, is of significance. Examples of such apparatus and methods of utilization are found in the above-referenced U.S. Pat. Nos. 5,366,560 and 5,588,901.

The sport of golf typically results in the collection of debris and dirt on the golf club heads and the need to clean the golf clubs. The use of traditional brush-and-bucket cleaning assemblies for cleaning golf club heads and the like is, however, replete with problems. First,
10 the user must spend an inordinate amount of time cleaning an individual club by hand. Second, the components for cleaning typically involve a receptacle containing dirty or otherwise contaminated water, which the user must expose himself to in order to wash undesired elements off of his golf clubs. These undesired elements can vary greatly, and include such elements as fertilizer. Such materials can cause residue that can be left on the golf club heads by virtue of the
15 contaminated rinse water. This is, in and of itself an issue of significance, because some fertilizer components can be used to make explosives. Golfers carrying clubs onto airplanes can inadvertently cause alarm if these "residue" components are detected during a security screening. The clubs should, therefore, be cleaned of such debris and undesirable elements. With old hard wash systems, however, the user typically drops a golf club completely into the dirty water,
20 thereby coating the entire club with such residue. This can exacerbate the problem of fertilizer contamination. These are just a few of the many problems associated with conventional brush-and-bucket cleaning assemblies.

As referenced above, it is well known in the sport of golfing, that golf clubs can become very dirty and/or stained from a single round of play. Typically, both dirt and grass and/or other vegetation encountered by the golfer are often embedded into various areas of a golf club head. It is desirable to have the golf club cleaned in a manner that it is both efficient and reliable. It

5 would also be advantageous to provide a manner for cleaning a series of golf clubs wherein the golf clubs could be placed in a generally horizontal manner in a cleaning system in any club order. Another advantage in cleaning multiple golf clubs of a golf club set would be to provide a method of and system for cleaning golf clubs that could receive either golf clubs for right-handed and left-handed players.

10 The present invention overcomes many of the disadvantages of known golf club cleaning systems by providing a method of and apparatus for receiving a plurality of golf clubs of the right and left-hand variety in a generally horizontal position and in no particular order. The golf clubs are situated in said generally horizontal position and aligned so that a substantially optimum angle is created between the golf club head surface to be cleaned and the cleaning

15 apparatus. In this manner, a highly reliable and efficient system is created that affords the user a wider variety of advantages than heretofore possible.

SUMMARY OF THE INVENTION

The present invention relates to a method of and apparatus for cleaning multiple golf club heads substantially at the same time. More particularly, the present invention pertains to a golf club cleaning system of the type having a nozzle assembly for a pressurized fluid stream for the generally horizontal receipt and placement of a plurality golf clubs with the heads thereof disposed beneath the nozzle. The invention includes an enclosure lid adapted for positioning

over the golf clubs during the cleaning thereof. The lid forms a spray enclosure in conjunction therewith and adapted for receiving the golf clubs in the generally horizontal position. In one embodiment, means are provided for discharging abrasives and/or pressurized fluid from the nozzle assembly. Further, means are provided for the rectilinear movement of the nozzle assembly above the golf club heads positioned within the spray enclosure. At least one rinse discharge nozzle is provided and adapted for spraying the golf club heads during the rectilinear movement of the nozzle assembly across the golf clubs.

5 In another aspect, the present invention is adapted for receipt of right and left handed golf clubs. Further, the rinse discharge nozzle assembly may include at least one detergent nozzle and at least one rinse nozzle. In yet another aspect, the spray enclosure is generally trapezoidal in shape.

10 In still another aspect of the invention, the means for the rectilinear movement of the nozzle assembly includes a grooved belt, a plurality of wheels coupled to the belt so as to impart tension to the belt, and a plurality of guide wheels coupled to the nozzle assembly. The guide 15 wheels are matched to the grooves of the grooved belt for imparting rectilinear movement to the nozzle assembly.

15 In yet another aspect of the present invention, a pressurized fluid dispenser is positioned at the pressurized fluid receiving portion. The fluid dispenser is positioned so as to spray a substantially fan-shaped pressurized fluid jet across the abrasive and/or pressurized fluid chamber. The fluid jet has a width-wise axis and a height-wise axis, with the height-wise axis 20 being measured substantially perpendicular to the width-wise axis. The fluid jet further includes two side-edge portions, one each on either of two sides and adjacent to an interior portion of the fluid jet. The fluid jet has a substantially uniform dispersion along the width-wise axis.

In yet another aspect, the invention includes a spray enclosure which has a substantially fan-shaped orientation so as to include the width-wise axis of the fluid. The spray enclosure has interior side walls configured to substantially align, with minimum interference, with the outer side-surfaces of the fluid jet.

5 In another aspect, the spray enclosure has a substantially truncated triangular shape oriented to include the widthwise axis of the fluid jet, and a truncated end forming an inlet for the receipt of pressurized fluid. The spray enclosure flares outwardly from the inlet to an exit, thereby maintaining a substantially uniformly dispersed fluid dispersion.

10 In yet another aspect, a shut-off valve is provided for permitting, prohibiting and adjusting an abrasive load drawn into the abrasive and/or pressurized fluid entrainment chamber.

The present invention has several advantages over the known prior art. First, the system is relatively easy to use because an entire set of golf club irons may be placed in a generally horizontal position. Second, the system is automated, thus it requires less work to clean a set of golf club irons than certain cleaning systems. Third, the system may be designed such that the 15 faces of the golf club irons are at an angle generally between 15 and 30 degrees to the detergent nozzle for optimum cleaning. Fourth, the system may be designed such that the golf club heads are cleaned generally between 30 to 90 seconds by adjusting the speed at which the nozzle assembly traverses the golf club heads. Finally, the system is adaptable for use with right and left handed golf club irons.

BRIEF DESCRIPTION OF THE DRAWINGS

A more complete understanding of the method and apparatus of the present invention may be obtained by reference to the following Detailed Description when taken in conjunction

5 with the accompanying Drawings wherein:

FIGURE 1 is a perspective view of the golf club head cleaning system of the present invention;

FIGURE 2 is a perspective view of the cleaning system shown in FIGURE 1, with the lid in an open position;

10 FIGURE 3 is a perspective view of the cleaning system shown in FIGURES 1 and 2, with the lid in a closed position having golf clubs placed in the cleaning system;

FIGURE 4 is rear perspective view of the cleaning system shown in FIGURES 1, 2 and 3, with the rear portion of the cleaning system removed therefrom;

15 FIGURE 5 is a frontal partial cutaway of the cleaning system of the present invention illustrating the cleaning assembly and the track assembly;

FIGURE 6 is a top partial cutaway of the cleaning system illustrated in FIGURE 5;

FIGURES 7 and 8 illustrate the manner of placement of right and left handed golf clubs into the cleaning system of the present invention;

20 FIGURE 10 is a perspective view of the cleaning system set forth in applicant's co-pending U.S. Patent Application No. 09/793723, and labeled therein as FIGURE 7;

FIGURE 11 is a more detailed illustration of the cleaning system set forth in applicant's co-pending U.S. Patent Application No. 09/793723, and labeled therein as FIGURE 8;

FIGURE 12 is a perspective view of a back side of the cleaning system set forth in applicant's co-pending U.S. Patent Application No. 09/793723, and labeled therein as FIGURE 9, and

Addendum A comprises co-pending U.S. Patent No. 09/793,723 filed February 26, 2001
5 of which this application is a continuation-in-part.

DETAILED DESCRIPTION

It has been found that a cleaning system affording the mounting of a plurality of golf clubs in a generally horizontal position within an apparatus generally no larger than that of a 10 household washer machine, and utilizing a nozzle spray system designed to inject sodium bicarbonate and or other scouring/cleaning agents designed to remove dirt and debris but not adversely affecting the golf club surfaces is of considerable advantage. In general, the present invention provides for such an apparatus. The present invention described below provides a lid on the top of the apparatus that may be opened to accept the placement of a complete set of golf 15 club irons of the right hand and left hand variety. After the clubs have been inserted into the apparatus and the lid closed, a pump or the like as described below may be actuated for driving a belt mechanism or the like coupled to a series of nozzles designed to inject the aforesaid sodium bicarbonate and/or other scouring cleaning agents designed to remove dirt and debris but not adversely affecting the golf club surfaces. As described below, other nozzles may be designed to 20 spray water during a rinsing cycle for removing dirt and debris and other undesirable elements from the golf clubs and for rinsing the cleaning/scouring agents therefrom. To remove waste and cleaning agents expelled from the nozzles during the various cycles from the apparatus, a drain may be provided as described in more detail.

Referring now to drawings 10, 11 and 12, which match Applicant's co-pending application Serial No. 09/793,723, and labeled therein as FIGURES 7, 8, and 9, referenced above and incorporated herein by reference, one or more nozzle assemblies may be incorporated into a cleaning system for golf clubs. In this particular embodiment, a basic cleaning procedure is 5 performed by the system therein described. The golf clubs as shown therein are oriented generally vertically during the cleaning process, and the golf club heads are first scoured with high pressure abrasive and/or water from at least two angles. These angles of application of the cleaning solution upon the clubs are said to be established by the set orientation of the two nozzle assemblies therein.

10 Figures 10 and 11 of said co-pending application, and labeled therein as FIGURES 7 and 8, illustrate a front side view of the cleaning system wherein a hinged door is provided to allow access to the interior space. Other aspects of the operation thereof are set forth and described and the reference hereto are made for purposes of clarity in describing the improved system as now set forth by the inventor. Multiple changes including a horizontal holding rack allowing 15 placement of the clubs in a generally horizontal position in a top loaded system facilitate a myriad of advantages relative to the cleaning operation.

Referring now to the drawings in the present application, and, more particularly to FIGURE 1, there is shown a perspective view of the golf club head cleaning system 10 illustrated without the receipt of golf clubs therein. The system 10 includes a body portion 12 and lid 14 hingely connected thereto. The lid 14 is of a generally trapezoidal shape, and in this 20 particular embodiment, adapted for receiving golf clubs of the right hand and left hand variety, as will be described in more detail below. A control box 16 is likewise shown protruding

outwardly of body 12 and adapted for receiving coins for the actuation thereof. A power cord 18 is shown extending from body 12 for purposes of providing power to the system 10.

Referring now to FIGURE 2, there is shown a perspective view of an exemplary embodiment of the golf club cleaning system 10, illustrated in FIGURE 1, with the lid 14 in an open position. In FIGURE 2 there is shown a series of interlocking triangular protrusions forming grooves 20 and a notched surface forming grooves 22. Notched surface grooves 21 on lid 14 are complementary to grooves 22 to facilitate the closing of lid 14 around golf club irons. Grooves 20 and 22 are adapted for the receipt left and right handed golf club irons in a generally horizontal position therein. As the lid 14 is placed in a closed position (as shown in FIGURE 1), an abrasive and/or pressurized fluid entrainment chamber is formed around the golf club irons, preventing the flow of waste outside the system 10.

Also shown in FIGURE 2 is a nozzle assembly 24, which includes detergent nozzle 23 and rinse nozzles 25 and 27. A more detailed description of the design of nozzle 23 may be found in said co-pending application. As system 10 begins a cleaning cycle, nozzle assembly 24 moves in a rightward direction relative to the system 10 along a grooved belt of a track assembly 26, with nozzle 23 spraying a detergent onto the face of the golf club irons. When nozzle assembly 24 reaches the end of track assembly 26, the faces of the golf club irons are rinsed of the detergent by rinsing nozzles 25 and 27, as the nozzle assembly 24 translates in a leftward direction. Grooves 22 and 20 are positioned relative one to the other such that the golf club faces are stored in system 10 at an angle generally between 15 to 30 degrees to the nozzle 23. This results in the optimum cleaning of the golf club faces. Further, the system 10 may be designed such that the golf clubs are cleaned generally between 30 to 90 seconds by adjusting the speed at which the nozzle assembly 24 traverses the golf club heads.

Referring now to FIGURE 3, there is shown an exemplary embodiment of the golf club cleaning system 10 of FIGURES 1 and 2 with golf club irons 15 placed in a generally horizontal position therein for cleaning. In this embodiment, the golf club irons 15 are placed in a position for cleaning right hand golf club irons. However, if the golf club irons 15 were of a left hand variety, the golf club irons 15 may be placed in slots 13 for proper cleaning.

Referring now to FIGURE 4, there is illustrated a rear perspective view of the golf club cleaning system 10, illustrated in FIGURES 1-3. The system 10 may include inlet connection 31 and drain connection 32, both connected to an external source and drain respectively. A back plate 36 may be provided to protect the electrical and mechanical components of the system 10 from damage of water and/or detergent. A motor 38 moves nozzle assembly 24 (not shown) along track assembly 26 (not shown) of FIGURE 2 via a belt assembly 48.

Referring again to FIGURE 4, a pump 40 is provided for pumping water from inlet connection 31 to nozzle assembly 24 (shown in FIGURE 2) at a sufficient pressure to facilitate the proper cleaning of golf clubs by golf club cleaning system 10. Valves 42 and 43 supply water from inlet connection 31 to cleaning and rinse nozzles 23, 25, and 27 of nozzle assembly 24 (shown in FIGURE 2). A hose 44 is a fluid connection between the detergent nozzle 23 of nozzle assembly 24 (shown in FIGURE 2) and detergent container 48. Fluid utilized by the cleaning system 10 is drained through the drain connection 32.

Referring now to FIGURES 5 and 6 in combination, there is shown an exemplary embodiment of a top and side partial cutout view of the golf club cleaning system 10 according to the present invention. Detergent nozzle 23 along with rinse nozzles 25 and 27 are in fluid connection with inlet connection 31 (shown in FIGURE 3) via lines 52 and 54. Detergent nozzle 23 is further connected to a detergent via line 44. Nozzle assembly 24 moves along the front

faces of the golf clubs stored in the golf club system 10 via track assembly 26. Specifically, wheels 56, which are attached to nozzle assembly 24, move along a belt 56 as wheels 26 are rotated by motor 38 (shown in FIGURE 3).

With reference now to FIGURES 7 and 8 in combination, there is shown an exemplary embodiment of the placement of golf club irons in the interlocking triangular protrusions forming grooves 20 of the golf club cleaning system 10. Left handed clubs are shown placed in the grooves 20 in FIGURE 7, and right handed clubs are shown placed in grooves 20 in FIGURE 8. The shape of the interlocking triangular protrusions forming grooves 20 allows the use of both right and left handed clubs with the golf club cleaning system 10 of the present invention.

10 A plurality of holes 70 forming a waste drain is connected to the drain connection 32 of FIGURE 3.

Referring now to FIGURE 9, there is shown a schematic illustrating an exemplary embodiment of the fluid and electrical connections of the golf club cleaning system 10 according to the principles of the present invention. As can be seen from FIGURE 9, water from inlet valve 31 is pumped by pump 40 through a splitter into valves 43 and 42. Water flowing through valve 42 is in fluid connection with detergent nozzle 23 via tube 52, and water flowing through valve 43 is in fluid connection with rinsing nozzles 25 and 27 via tube 54. Further, detergent nozzle 23 is in fluid connection with detergent container 48 via tube 44.

20 In operation, a set of golf club irons are placed in the golf club cleaning system 10 according to the principles of the present invention. The golf club irons may be placed generally horizontal in a right hand and left hand configuration such that the face of each golf club iron lies in grooves 20 and 22 at an angle generally between 15 and 30 degrees relative to detergent nozzle 23 of the nozzle assembly 24. The lid 14 is then closed around the golf club irons. As the

lid 14 is closed, complementary grooves 21 and 22 form slots 13 around the handle of the golf club irons. Golf club cleaning system 10 may then be activated by inserting a coin into control box 16. When activated, the cleaning system 20 translates along track assembly 26 while detergent nozzle 23 imparts a stream of detergent from detergent container 48 to the faces of the 5 golf club irons. Upon translating the length of track assembly 26, nozzle assembly 24 activates the rinse nozzles 23 and 27 and translates in the reverse direction along track assembly 26 while rinsing the detergent from the face of the golf club irons. The rinsed detergent is then drained through drain connection 32.

The golf club cleaning system 10 according to the principles of the present provides at 10 least the following advantages over the known prior art. First, the system 10 is relatively easy to use because an entire set of irons is placed in the system 10 in a generally horizontal position. Second, the system 10 is automated, thus requiring less work to clean a set of golf club irons than certain cleaning systems. Third, the system 10 may be designed such that the faces of the golf club irons are at an angle generally between 15 and 30 degrees to the detergent nozzle 23 for 15 optimum cleaning. Fourth, the system may be designed such that the golf club heads are cleaned generally between 30 to 90 seconds by adjusting the speed at which the nozzle assembly traverses the golf club heads. Finally, the system 10 is adaptable for use with both right and left handed golf club irons.

The previous description is of a preferred embodiment for implementing the invention, 20 and the scope of the invention should not necessarily be limited by this description. The scope of the present invention is instead defined by the following claims.